



Factors contributing to addiction recurrence with emphasizing on the role of social factors: A study in Rehabilitation Centers of Ilam, in west of Iran

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General Note



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ABSTRACT

Background: High prevalence of addiction recurrence shows that therapeutic method of addiction has not been recognized and it demands more researches in this field. Social factors could be one of the main elements that influence recurrences of drug consumption. This study was conducted to assess the role of social factors in maintaining drug abstinence after treatment. **Material and method:** In this cross sectional study, we studied 318 subjects that were treated in Rehabilitation Centers of Ilam by multi stage sampling method in 2019. The social support and social capital questionnaires were used to determine the roles of social factors in addiction recurrence. The data was analyzed by SPSS software using logistic regression and survival analysis including Kaplan-Meier and life table methods. **Results:** The mean age of the participants was 34.25 ± 9.13 years. The mean and median times of addiction recurrence were 35.45 ± 2.53 and 20 ± 2.62 months after drug withdrawal, respectively. In addition, the social capital components, age, education, marital status, occupation, the type of rehabilitation center, the type of drug, cigarette smoking, methadone use, and the history of previous quitting attempts were significantly associated with addiction recurrence. **Conclusion:** According to the results, no single factor can effectively predict addiction recurrence. Instead, a multi factorial approach incorporating individual, familiar, social, and cultural factors as lack of social capital in various levels is suggested to predict the risk of addiction recurrence.

Keywords: addiction recurrence, social factors, social capital

1. INTRODUCTION

High prevalence of addiction recurrence (to 80%) shows that therapeutic method of addiction have not been recognized and it demands more researches in this field (Heydari, Dashtgard et al., 2014). Drug usage, whether as a part of traditional rituals or as a way to alleviate pain, is a prevalent phenomenon in around the world. Some studies have been described the beneficial properties of opium as an antidote, as well as its detrimental effects (Pieroni and Quave 2005, DiClemente, 2018). Addiction is defined as acute or chronic intoxication with a natural or synthetic drug. Addicted individuals usually acquired resistance to the drug gradually diminishing its side-effects. Therefore, addicts consume great amount of the drug without feeling discomfort which finally leads to physical and psychological dependence (Pieroni and Quave 2005, Loose 2018). Today, drug addiction has turned to an acute problem, along burden of disease, environmental pollution, social anomalies and poverty, falling into four major global crises (Çam and Isbulan 2012). Addiction has also increased in Iran in recent years, and the number of addicts in the country reaches to nearly 2 million, according to official reports (Sarrami, Ghorbani et al., 2013; Shariatirad, Maarefvand et al., 2013).

Currently, methadone maintenance therapy (MMT) is an important way to treat opioid dependence in many parts of the world. In this approach, addicts receive long-term, and in some cases, life-long MMT (McElrath and Joseph 2018). Addiction recurrence rates have been reported from 50% to as high as 80% within the first year after withdrawal (Heydari, Dashtgard et al. 2014, Butler, Ancona et al. 2016). If addiction is reduced, it will reduce violence and reduce hospitalizations and save money (Sohrabzadeh et al., 2015; Aivazi et al., 2015).

In the present study, we aimed to characterize factors influencing addiction recurrence with emphasizing on the role of social factors. The identification of such factors can help to reduce the rate of substance reuse and thereby improve physical, psychological, social, economic, and cultural status that consequently can be influenced on qualities of life of addicts.

2. MATERIALS AND METHODS

In this cross sectional study, we studied 318 subjects that were treated in Rehabilitation Centers of Ilam city by multi stage sampling method. A checklist was used to characterize factors influencing drug recurrence. The social support and social capital questionnaires were used to determine the roles of social factors. Before data collection, required explanations were given to the participants. The participants were selected using the multi-stage sampling method from addicts referred to outpatient and maintenance rehabilitation centers of Ilam city during 2019.

The primary checklist addressed information such as age, sex, education, employment status, the type of drug and the duration of usage, the date of recurrence, the number of households' members, as well as the route and frequency of daily drug usage. These

variables were determined by interviews and reviewing the records available in rehabilitation centers. Drug recurrence was confirmed by urinary morphine test.

The social capital was measured using a standard questionnaire consisting of three dimensions (1- personal trust, 2- social solidarity and support, and 3- social trust and cohesion) (Kassani, Gohari et al., 2012).

Social capital questionnaire

This questionnaire was first used in the Urban HEART Study in Tehran. The questionnaire consists of 69 questions and 9 sub-sections which are about voluntary participation, group activity, trust, and the sense of solidarity. These variables were scrutinized at the level of family members, relatives, friends, neighbors, co-workers (only for employees), people of same ethnicity, hometowns.

The other section of the questionnaire involved adherence to values including honesty, bailment and keeping others' secrets, rectitude, forgiveness, and fairness. The other four sub-sections were concerned with social support, participation in community activities (parental forums, sport groups, charity and trade associations, ethnic and other communities), social status (cultural, social, economic, etc.) and commuting with family members, relatives, friends, neighbors and co-workers. Depending on the types of questions, each item was given a score between 1 and 5. The score of each sub-section was calculated by dividing the total score to the number of sub-sections (Hassanzadeh, Asadi-Lari et al., 2018).

The validity of this questionnaire had been assessed by exploratory factor analysis in the first phase of the Urban HEART Study. Accordingly, the three dimensions of personal trust, social solidarity/support, and social trust/relationships explained 64.6% of the social capital's variance. The reliability of the questionnaire was assessed by Kassani et al. (Kassani, Gohari et al., 2012). The scores of the personal trust, social solidarity/support, and social trust/relationships domains varied from 1 to 5 which higher scores indicated better status of the dimension.

Social support

Social support is one of the key concepts in the social networking perspective. The networking approach emphasizes on the size and density, as well as the degree of social integration of individuals. Social support means that an individual acquires love, companionship, respect, and help from friends and family members within social networks.

In this study, social support was assessed through nine items surveyed in the Likert scale. The validity and reliability of the items had been confirmed in previous studies. The questionnaire consisted of three dimensions including instrumental, information, and emotional supports. Each dimension included three questions, and each question was given a score from 1 to 5. The total score ranged from 9 to 45 (Ahrari, Moshki et al., 2014). The ethical approval this study have received from by the Ethics Committee of Ilam University of Medical Sciences (ethical code: IR.MEDILAM.REC.1398.95). The data was analyzed by SPSS version 18 software (SPSS, Chicago, IL, USA). The obtained data were analyzed by logistic regression and survival analysis including Kaplan-Meier and life table methods. The significance level was considered at P value <0.05.

3. RESULTS

Overall, 318 addicts referred to rehabilitation centers of Ilam city that enrolled in this study. The mean age of the participants was 34.25 ± 9.13 years (the range of 18-71). According to the type of the referral center, 120 (37.7%) and 198 (62.3%) were in outpatient and maintenance rehabilitation centers, respectively.

The mean number of households' family members was 4.42 ± 2.05 (the range of 1-12). Of the participants, 133 (43%) were married and 117 (38.8%) were unemployed. Regarding education, 134 (43.8%) had high school and diploma. Also, 85(26.7%) of them had a family history of addiction. Table 1 shows the types of drugs used by the addicts.

The mean of daily episodes of drug consumption was 2.97 ± 3.50 (the range of 1 to 14 times daily). Also, 115 (39.8%) of the addicts had previous quitting attempts. Overall, 284 (89.6%) and 133 (43%) of the studied population had smoked cigarette (the mean of 10.54 ± 8.34 cigarettes) and hookah, respectively. Finally, 227 (71.4%) had a history of MMT. Addiction recurrence was reported in 117 (36.8%) of the participants.

According to the results of logistic regression, age, education, marital status, occupation, the type of rehabilitation center, the type of drug, cigarette smoking, methadone use, and the history of previous quitting attempts were significantly associated with addiction recurrence. However, addiction recurrence was not significantly associated with sex, hookah smoking, and family history of addiction. Furthermore, all the three components of social capital (i.e. personal trust, social solidarity/support and social trust/relationships) were significantly associated with addiction recurrence. Table 2 shows the status of addiction recurrence based on the life table analysis.

Table 1 The relationship between demographic variables, social capital, and social support with addiction recurrence using logistic regression analysis

| Variables | Case group Mean (SD) | Control group Mean (SD) | Odds ratio (OR) | Adjusted OR | 95% CI |
|--------------------------|-------------------------|----------------------------|--------------------|-------------|-----------|
| Age | 31.64 (6.49) | 34.41(6.75) | 0.02 | 0.79 | 0.61-0.94 |
| Individual trust | 2.73 (0.47) | 3.31 (0.51) | 0.03 | 0.73 | 0.53-0.90 |
| Social solidarity | 2.69 (0.48) | 3.12 (0.50) | 0.03 | 0.81 | 0.60-0.91 |
| Social trust/Association | 2.33 (0.41) | 2.59 (6.43) | 0.01 | 0.91 | 0.61-0.94 |
| Social support | 29.84 (5.90) | 35.81 (6.45) | 2.12 | 0.80 | 0.27-0.97 |

Table 2 The status of addiction recurrence based on the life table analysis

| Time interval (Month) | Withdrawals N | At risk N | Recurrence N | Risk estimate | survival | cumulative survival | Hazard ratio |
|--------------------------|------------------|--------------|-----------------|---------------|----------|------------------------|-----------------|
| 0-6 | 64 | 286 | 6 | 0.02 | 0.98 | 0.98 | 0.004 |
| 6-12 | 40 | 228 | 52 | 0.23 | 0.77 | 0.76 | 0.037 |
| 12-18 | 33 | 139 | 44 | 0.32 | 0.68 | 0.52 | 0.062 |
| 18-24 | 27 | 65 | 10 | 0.15 | 0.85 | 0.44 | 0.013 |
| 24-30 | 2 | 41 | 3 | 0.07 | 0.93 | 0.41 | 0.005 |
| 30-36 | 25 | 24.5 | 1 | 0.04 | 0.96 | 0.39 | 0.003 |
| 36-42 | 7 | 7.5 | 1 | 0.13 | 0.87 | 0.34 | 0.009 |
| 42-48 | 0 | 3 | 0 | 0 | 1 | 0.34 | 0 |
| 48-54 | 1 | 2.5 | 0 | 0 | 1 | 0.34 | 0 |
| 54-60 | 0 | 2 | 0 | 0 | 1 | 0.34 | 0 |
| 60-66 | 0 | 2 | 0 | 0 | 1 | 0.34 | 0 |
| 66-72 | 2 | 1 | 0 | 0 | 1 | 0.34 | 0 |

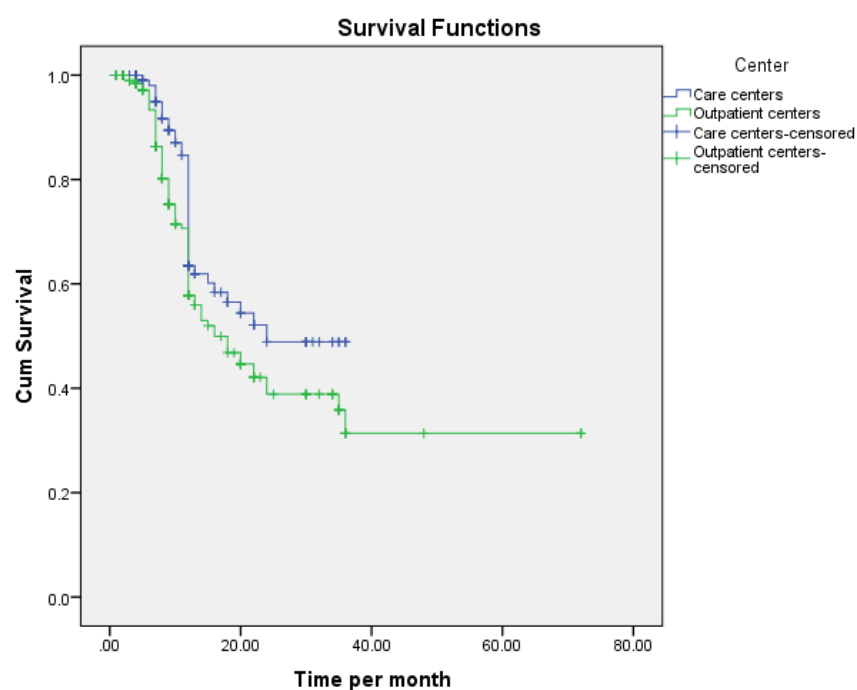


Figure 1 Addiction recurrence function based on the type of rehabilitation center

Table 3 The descriptive statistics of addiction recurrence time based on Kaplan-Meier Analysis

| Parameters | Estimation (per Month) | SE | 95% CI |
|------------|------------------------|------|-------------|
| Mean | 35.45 | 2.53 | 30.40-48.42 |
| Median | 20 | 2.62 | 14.25-85.14 |

According to the Kaplan-Meier analysis, the mean and median times of addiction recurrence were about 35 and 20 months after drug withdrawal, respectively. The trend of addiction recurrence revealed a peak at 6-18 months and then a constant trend at 40 months after referral to the rehabilitation centers (figure 1).

4. DISCUSSION

In the present study, we aimed to determine the relationship between demographic and some social health determinants including social capital parameters (i.e. personal trust, social solidarity/support and social trust/relationships) with addiction relapse using survival analysis and Cox's regression analysis in addicts referred to outpatient and maintenance rehabilitation centers of Ilam city in 2019.

The prevalence of addiction recurrence was 36.8% (117 cases). According to survival analysis, the rate of recurrence after referral to the rehabilitation centers was about 2% with the highest risks being observed at 12-18 months (32%) and 6-12 months (23%) after admission. According to the cumulative survival analysis, the rates of successful quitting were 98%, 76%, 52%, and 44% at the end of 6, 12, 18, and 24 months after referral to the rehabilitation centers. In addition, the highest hazard ratios of addiction recurrence were related to 12-18- and 6-12-month post-referral.

In a previous study (2015) performed in 4 rehabilitation centers of Ilam, the prevalence of addiction recurrence was 30.42% (Kassani, Niazi et al., 2015). Furthermore, the highest risk of recurrence was observed at 6 months after admission which was consistent with our results (Kassani, Niazi et al., 2015). In another study conducted in Khuzestan province of Iran, 32.9% of studied participants had a history of at least one drug quitting attempt which was similar to the present study (Nazari, Jamshidi et al., 2016). In a study in north region of Iran, reported the prevalence of addiction recurrence as 48% which was higher than the rate observed in the present study (Barr and Noroozi, 2013). Other studies have reported addiction recurrence rates of 50% to 80% within the first year after drug withdrawal (Hyman, Fox et al., 2007).

According to the results of logistic regression analysis, age, education, marital status, occupation, the type of rehabilitation center, the type of drug, cigarette smoking, methadone use, and history of previous quitting attempts were significantly associated with the risk of addiction recurrence. However, addiction relapse was not significantly associated with sex, hookah smoking, and family history of addiction. In line, Cox's regression model revealed significant relationships between addiction recurrence and age (OR = 0.53, 95% CI: 0.30-0.91), gender (male to female; OR = 1.94, 95% CI: 1.16-3.23), education (illiterate to academic; OR = 1.52, 95% CI: 1.06-2.18), marital status (married/ divorced/ widowed; OR = 0.94, 95% CI: 0.92-0.96), occupation (unemployed/employee; OR = 1.39, 95% CI: 1.01-1.91), the type of referral center (outpatient/maintenance; OR = 3.36, 95% CI: 1.61-6.91), the type of drug (opium /LSD; OR = 1.78, 95% CI: 1.2-21.60, heroin /LSD; OR = 1.78, 95% CI: 1.2-13.66), cigarette smoking (yes/no; OR = 2.47, 95% CI: 1.01-6.05), and methadone use (OR = 0.60, 95% CI: 0.41-0.89). In a study in Ilam in 2012, marital status (OR = 1.55, 95% CI: 1.21-1.88), occupation (OR = 2.64, 95% CI: 1.35-5.19), and age (OR = 0.93, 95% CI: 0.89-0.97) significantly correlated with the risk of addiction recurrence.

In the present study, a significant relationship was observed between addiction recurrence and the type of drug used by the addicts. In other words, people who consumed heroin and opium were more likely than others to start reusing the drugs. Likewise, Farzam et al. stated the addiction recurrence rates of 39% and 42% in opium and heroin users respectively (Farzam, Farhadi et al., 2010). This higher rate may be partly attributed to the more severe destruction of the defense and support mechanisms in heroin addicts (Hosztafi, 2011).

In the study of in Khuzestan, the prevalence of addiction recurrence was higher among unemployed, lower educated, and male addicts which were consistent with the results of the present study (Nazari, Jamshidi et al., 2016). In another study by Roux et al., the type of drug, age, adherence to methadone therapy, and the duration of drug usage were the main contributors to addiction recurrence. However, gender, marital status, and educational level were not significantly associated with the risk of recurrence (Roux, Lions et al., 2014).

Age is an important factor contributing to the development of social capital. In parallel to income and leisure time, one's social participation varies in different age spectrums (Wolff, Acevedo-Garcia et al., 2010). Age inversely correlates with sociability and social

participation. Single and multiple memberships in social groups are more frequently observed in individuals aged 18-29 and 30-59 years old, respectively. On the other hand, people older than 60 years old are infrequently present in social groups which can be related to alternations in financial, educational, occupational, familial, and marital, as well as social capital states at this age spectrum (Bowling and Gabriel, 2004; Wolff, Acevedo-Garcia et al., 2010). Gender is also one of the factors influencing addiction recurrence. Accordingly, women are more likely to participate and cooperate in drug withdrawal programs. Gender also affects membership in social groups and associations. In fact, women are more willing to take part in charitable, parental, cultural and educational associations, while men are more interested to join political and economic societies which can contribute to the higher risk of relapse in men (Molyneux, 2002). In consistent with our results, Behnoosh *et al.* (2015) noted that age, social exclusion, unemployment, and low income were factors associated with addiction recurrence (Behnoosh, 2012). These results were in line with those of Saberifar et al. who showed that the feelings of loneliness and isolation (i.e. the domain of demographic and personal factors), inappropriate parent-child relationships (i.e. the domain of familial factors), having addicted friends (i.e. the domain of social factors), and unemployment (i.e. the domain of economic factors) were significantly associated with addiction relapse (Saberifar, 2008). In another study in Tehran, Rimaz et al. (2010) illustrated significant relationships between addiction recurrence and individual, social, psychological and medicinal parameters (Rimaz, Dastoorpoor et al., 2015). Studies suggest the necessity of integrating family-based counseling and therapeutic approaches along with long-term monitoring and care of treated addicts to mitigate the effects of factors such as family conflicts and peer pressure on recurrence of addiction (Tata and Prasad, 2008). These are consistent with the results of the present study.

According to the Kawachi' approach, social capital can affect addiction recurrence through five characteristic ways of propagating information, increasing health-compatible behaviors, controlling risky social behaviors (e.g. smoking), increasing access to facilities and services, and finally augmenting positive psychological processes (e.g. effective social supports) (Kawachi and Berkman 2000; Kawachi, Subramanian et al., 2008). Accordingly, Cheung argued that factors such as injustice and social anomalies may jeopardize people's health and can increase the risk of addiction recurrence (Cheung and Cheung, 2003). Some related studies also described a very strong relationship between social capital and social solidarity across all community subgroups including addicts (Casey 2012; Bian and Leung 2015).

5. CONCLUSION

According to the results of the present study, no single factor can effectively predict addiction recurrence. Instead, a multifactorial approach incorporating individual, familial, social, and cultural factors is suggested to predict the risk of addiction recurrence.

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Conflicts of Interest:

The authors declare no conflict of interest.

REFERENCE

1. Ahrari, S., M. Moshki and M. Bahrami. "The relationship between social support and adherence of dietary and fluids restrictions among hemodialysis patients in Iran." *Journal of caring sciences*, 2014: 3(1): 11.
2. Aivazi AA, Tavan H. Prevalence of conceived violence against nurses at educational hospitals of Ilam, Iran, 2012. *Int J Afr Nur Sci*. 2015; 2:65-8.
3. Barr, A. M. and A. Noroozi. Methamphetamine-associated psychosis: a new health challenge in Iran, *BioMed Central*. 2013
4. Behnoosh, S. "The relationship between social capital and intrapreneurship in general administration of physical education of Khorasan Province, Iran." *World Applied Sciences Journal*, 2012: 18(3): 317-321.
5. Bian, M. and L. Leung. "Linking loneliness, shyness, smartphone addiction symptoms, and patterns of smartphone use to social capital." *Social Science Computer Review*, 2015: 33(1): 61-79.
6. Bowling, A. and Z. Gabriel. "An integrational model of quality of life in older age. Results from the ESRC/MRC HSRC quality

- of life survey in Britain." *Social Indicators Research*, 2004: 69(1): 1-36.
7. Butler, M. M., R. M. Ancona, G. A. Beauchamp, C. K. Yamin, E. L. Winstanley, K. W. Hart, A. H. Ruffner, S. W. Ryan, R. J. Ryan and C. J. Lindsell. "Emergency department prescription opioids as an initial exposure preceding addiction." *Annals of emergency medicine*, 2016: 68(2): 202-208.
 8. Çam, E. and O. Isbulan. "A New Addiction for Teacher Candidates: Social Networks." *Turkish Online Journal of Educational Technology-TOJET*, 2012: 11(3): 14-19.
 9. Casey, B. M. "Linking psychological attributes to smart phone addiction, face-to-face communication, present absence and social capital." *Graduation Project, Graduate School of the Chinese University of Hong Kong*. 2012
 10. Cheung, Y. W. and N. W. Cheung. "Social capital and risk level of posttreatment drug use: Implications for harm reduction among male treated addicts in Hong Kong." *Addiction Research & Theory*, 2003: 11(3): 145-162.
 11. DiClemente, C. C. *Addiction and change: How addictions develop and addicted people recover*, Guilford Publications. 2018
 12. Farzam, H., K. Farhadi, M. Rezaei and A. TOLOUEI "Comparing ultra rapid opiate detoxification with Methadone in recurrent of self-introduced addicted subjects." 2010
 13. Hassanzadeh, J., M. Asadi-Lari, H. Ghaem, A. Kassani, M. Niazi and R. Menati. "The Association of Poor Mental Health Status and Sociocultural Factors in Men: A Population-Based Study in Tehran, Iran." *American journal of men's health*, 2018: 12(1): 96-103.
 14. Heydari, A., A. Dashtgard and Z. E. Moghadam. "The effect of Bandura's social cognitive theory implementation on addiction quitting of clients referred to addiction quitting clinics." *Iranian journal of nursing and midwifery research*. 2014:19(1): 19.
 15. Hosztafi, S. "Heroin addiction." *Acta pharmaceutica Hungarica*, 2011: 81(4): 173-183.
 16. Hyman, S. M., H. Fox, K.-I. A. Hong, C. Doebrick and R. Sinha. "Stress and drug-cue-induced craving in opioid-dependent individuals in naltrexone treatment." *Experimental and clinical psychopharmacology*, 2007: 15(2): 134.
 17. Kassani, A., M. Gohari, M. Mousavi, M. Asadi Lari, M. Rohani and M. Shoja. "Determinants of social capital in Tehran residents using path analysis: urban HEART study." *Iranian Journal of Epidemiology*, 2012: 8(2): 1-12.
 18. Kassani, A., M. Niazi, J. Hassanzadeh and R. Menati. "Survival analysis of drug abuse relapses in addiction treatment centers." *International journal of high risk behaviors & addiction* 4(3). 2015
 19. Kassani, A., M. R. Gohari and M. Asadilari. "Factor analysis of social capital questionnaire used in Urban HEART study in Tehran." *Journal of School of Public Health and Institute of Public Health Research*, 2012: 10(2): 1-10.
 20. Kawachi, I. and L. Berkman. "Social cohesion, social capital, and health." *Social epidemiology*, 2000: 174(7).
 21. Kawachi, I., S. V. Subramanian and D. Kim. *Social capital and health*. Social capital and health, Springer: 2008: 1-26.
 22. Loose, R. *The subject of addiction: Psychoanalysis and the administration of enjoyment*, Routledge. 2018.
 23. McElrath, K. and H. Joseph. *Medication-assisted treatment (MAT) for opioid addiction: Introduction to the special issue*, Taylor & Francis. 2018
 24. Molyneux, M. "Gender and the silences of social capital: Lessons from Latin America." *Development and change*, 2002: 33(2): 167-188.
 25. Nazari, I., F. Jamshidi, Z. Rahimi and M. Cheraghi. "Effective factors of addiction relapse among self-introducing addicts to drug addiction-quitting centers in Khuzestan Province, Iran; 2015." *International Journal of Pharmaceutical Research & Allied Sciences*, 2016: 5(3).
 26. Pieroni, A. and C. L. Quave. "Traditional pharmacopoeias and medicines among Albanians and Italians in southern Italy: a comparison." *Journal of Ethnopharmacology* .2005:101(1-3): 258-270.
 27. Rimaz, S., M. Dastoorpoor, S. Vesali, N. Saiepour, S. Nedjat, M. Sadeghi and E. M. Khoei. "Investigation of relationship between social capital and quality of life in female headed families." *Medical journal of the Islamic Republic of Iran*, 2015: 29: 270.
 28. Roux, P., C. Lions, L. Michel, J. Cohen, M. Mora, F. Marcellin, B. Spire, A. Morel, P. M. Carrieri and L. Karila. "Predictors of non-adherence to methadone maintenance treatment in opioiddependent individuals: Implications for clinicians." *Current pharmaceutical design*, 2014: 20(25): 4097-4105.
 29. Saberifar, R. "The Effect of Social Capital on Mental Health of Citizens (Case Study: Mashhad City)." 2008.
 30. Sarrami, H., M. Ghorbani and M. Minooei. "Survey of four decades of addiction prevalence researches in Iran. *Research in addiction*". 2013: 26(7):32-42
 31. Shariatirad, S., M. Maarefvand and H. Ekhtiari. "Methamphetamine use and methadone maintenance treatment: an emerging problem in the drug addiction treatment network in Iran." *International Journal of Drug Policy*, 2013: 24(6): e115-e116.
 32. Sohrabzadeh M, Menati R, Tavan H, Mozafari M, Menati W. Survey on patient against female nurses and lack of reporting aggressive event in Ilam hospitals at 2012 [In Persian]. *Iran Occup Health J*. 2015; 12(1):47-55.

33. Tata, J. and S. Prasad. "Social capital, collaborative exchange and microenterprise performance: The role of gender." *International Journal of entrepreneurship and small business*, 2008: 5(3-4): 373-388.
34. Tata, J. and S. Prasad. "Social capital, collaborative exchange and microenterprise performance: The role of gender." *International Journal of entrepreneurship and small business*, 2008: 5(3-4): 373-388
35. Wolff, L. S., D. Acevedo-Garcia, S. Subramanian, D. Weber and I. Kawachi. "Subjective social status, a new measure in health disparities research: do race/ethnicity and choice of referent group matter?" *Journal of health psychology* 2010:15(4): 560-574.